

### AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of programming a device mobile robot, the method comprising:

providing a plurality of card-like objects, where at least one surface of the card-like objects includes indicia, wherein at least a portion of the indicia is machine readable and at least a portion is human recognizable;

visually recognizing the indicia on at least some of the card-like objects using an image recognition process;

associating the recognized indicia with one or more executable program instructions; and

arranging the one or more executable program instructions to create at least a portion of a computer program for control of the device, ~~wherein the device that is controlled corresponds to a mobile robot~~, wherein the computer program is configured to control includes mobility of the mobile robot as a whole away from a current position.

2. (Canceled)

3. (Previously presented) The method as defined in Claim 1, wherein visually recognizing further comprises using an imaging device to detect visual features of the card-like objects, where the imaging device views the card-like objects without touching the card-like objects.

4. (Original) The method as defined in Claim 1, wherein visually recognizing further comprises using an optical scanner to recognize the one or more card-like objects, where the optical scanner recognizes the one or more card-like objects without touching the one or more card-like objects.

5. (Original) The method as defined in Claim 1, wherein the indicia comprise both graphical markings and textual symbols.

6. (Original) The method as defined in Claim 1, wherein the card-like objects are formed at least in part from paper, and the card-like objects are not affixed to other objects.

7. (Original) The method as defined in Claim 1, wherein a card-like object corresponds to at least one of a token card and a command card.

8. (Original) The method as defined in Claim 1, wherein the portion of a computer program comprises at least one of a complete program, a macro, and a sub-routine.

9. (Original) The method as defined in Claim 1, further comprising:

associating the recognized indicia with one or more commands, where the commands control a programming environment and are not incorporated into an executable program; and

automatically executing the one or more associated commands to control the program.

10. (Original) The method as defined in Claim 9, wherein the one or commands are selected from at least one of a save command, a program listing command, and a start program command.

11. (Original) The method as defined in Claim 1, wherein visually recognizing the indicia further comprises recognizing visual features that correspond to scale-invariant features (SIFT).

12. (Currently amended) A method of programming a ~~device~~ mobile robot, the method comprising:

visually recognizing indicia that are visible on at least one surface of one or more planar objects, where at least one surface of the planar objects includes indicia, where at least a portion of the indicia is machine readable and at least a portion is human recognizable;

automatically associating at least some of the recognized indicia with one or more executable program instructions; and

arranging the one or more executable program instructions to create at least a portion of a computer program ~~for the device~~ for control of the device, ~~wherein the device corresponds to a mobile robot~~, wherein the computer program is configured to control includes mobility of the mobile robot as a whole away from a current position.

13. (Canceled)

14. (Previously presented) The method as defined in Claim 12, wherein visually recognizing further comprises receiving data from an imaging device to detect visual features of

the planar objects, where the imaging device views the planar objects without contacting the planar objects.

15. (Original) The method as defined in Claim 12, wherein visually recognizing further comprises receiving data from an optical scanner to recognize the one or more planar objects, where the optical scanner recognizes the one or more planar objects without contacting the one or more planar objects.

16. (Original) The method as defined in Claim 12, wherein the indicia comprise both graphical markings and textual symbols.

17. (Original) The method as defined in Claim 12, wherein the planar objects are formed at least in part from paper, and the planar objects are not affixed to other objects.

18. (Original) The method as defined in Claim 12, wherein a planar object corresponds to at least one of a token planar object and a command planar object.

19. (Original) The method as defined in Claim 12, wherein the portion of a computer program comprises at least one of a complete program, a macro, and a sub-routine.

20. (Original) The method as defined in Claim 12, wherein the portion that is machine readable and the portion that is human recognizable are the same.

21. (Original) The method as defined in Claim 12, further comprising associating at least some of the recognized indicia with one or more commands, where the commands are related to control of a programming environment.

22. (Original) The method as defined in Claim 12, wherein visually recognizing indicia further comprises recognizing visual features that correspond to scale-invariant features (SIFT).

23. (Currently amended) A method of controlling a ~~machine~~ mobile robot, the method comprising:

visually observing indicia that are visible on at least a surface of an object, where the indicia are at least partially machine readable and at least partially human recognizable, where at least some of the indicia is associated with a desired behavior for the ~~machine~~ mobile robot;

associating the recognized indicia with corresponding behavior based at least in part on data retrieved from a data store; and

controlling a behavior of the machine mobile robot according to the recognized indicia, ~~wherein the machine corresponds to a mobile robot,~~ wherein at least a portion of the behavior ~~that is controlled includes~~ is configured to control mobility of the mobile robot as a whole away from a current position.

24. (Canceled)

25. (Original) The method as defined in Claim 23, wherein the object is a card-like object.

26. (Currently amended) The method as defined in Claim 23, wherein at least some of the indicia are associated with command parameters and not with commands, further comprising interpreting the command parameters to at least partially control the behavior of the machine mobile robot.

27. (Currently amended) The method as defined in Claim 23, wherein visually recognizing indicia further comprises:

visually observing a plurality of indicia on a plurality of objects;

associating the plurality of indicia with a plurality of desired behaviors;

arranging the plurality of desired behaviors in an order according to a visually observed arrangement of the corresponding plurality of objects; and

controlling the behavior of the machine mobile robot according to the order.

28. (Original) The method as defined in Claim 23, further comprising verifying that the indicia have been correctly identified by visually observing consistent data for indicia.

29. (Original) The method as defined in Claim 23, wherein the recognized indicia are not associated with a product code for the corresponding object.

30. (Original) The method as defined in Claim 23, wherein the recognized indicia are not associated with an identification of a content of an object.

31. (Original) The method as defined in Claim 23, wherein a portion of the indicia that is machine readable and the portion of the indicia that is human recognizable are the same.

32. (Original) The method as defined in Claim 23, wherein a portion of the indicia that is machine readable and a portion of the indicia that is human recognizable are on a same surface of the object.

33. (Original) The method as defined in Claim 23, wherein a portion of the indicia that is machine readable and a portion of the indicia that is human recognizable are on different surfaces of the object.

34. (Original) The method as defined in Claim 23, wherein a portion of the indicia that is human recognizable corresponds to one or more words written in plain text.

35. (Currently amended) A set of physical computer control cards having computer-readable instructions for controlling a mobile robot, comprising:

- a set of one or more operator cards with indicia associated with operators, wherein each card of the set of one or more operator cards consists essentially of:

- a portion comprising graphical indicia depicting an operator; and

- a portion comprising computer-readable instructions associated with said operator;

- a set of one or more operator flow control cards with indicia associated with flow control, wherein each card of the set of one or more flow control cards consists essentially of:

- a portion comprising graphical indicia depicting a programmatic flow control parameter; and

- a portion comprising computer-readable instructions associated with said flow control parameter;

- a set of one or more operator action cards with indicia associated with actions for a computer, wherein each card of the set of one or more action cards consists essentially of:

- a portion comprising graphical indicia depicting an action that the mobile robot is configured to execute; and

- a portion comprising computer-readable instructions associated with said action; and

- a set of one or more operator command cards with indicia associated with commands, wherein each card of the set of one or more command cards consists essentially of:

Appl. No. : 10/754,917  
Filed : January 9, 2004

a portion comprising graphical indicia depicting a command that the mobile robot is configured to execute; and

a portion comprising computer-readable instructions associated with said command

wherein at least one of the operator flow control cards has a flow control parameter associated with a "break" instruction configured to terminate a programmatic loop being executed by the mobile robot.

36. (Original) The set of computer control cards as defined in Claim 35, wherein the computer control cards are fabricated from card stock.

37. (Currently amended) The set of computer control cards as defined in Claim 35, wherein ~~the~~ at least one of the one or more operator cards has indicia associated with operators corresponding to at least one selected from an arithmetic operator ~~and or~~ a comparison operator.

38. (Currently amended) The set of computer control cards as defined in Claim 35, wherein ~~the~~ at least one of the one or more flow operator control cards has indicia associated with flow control corresponding to at least one selected from a condition[[,]] ~~or a loop, and a~~ break.

39. (Currently amended) The set of computer control cards as defined in Claim 35, wherein ~~the~~ at least one of the operator action control cards has indicia associated with actions correspond to actions for control of [[a]] mobility of the mobile device robot, such that the mobile robot as a whole moves away from a current position.

40. (Original) The set of computer control cards as defined in Claim 35, further comprising a computer-readable tangible medium having stored therein:

visual data corresponding to at least a machine-readable subset of the visually-observable indicia; and

associations between the visual data and at least one of computer commands and computer programming statements.

41. (Currently amended) A computer program embodied in a computer-readable medium for controlling a ~~device~~ mobile robot, the computer program comprising:

a module with instructions configured to visually recognize indicia that are visible on at least one surface of one or more planar objects, where at least one surface of the planar objects includes indicia, where at least a portion of the indicia is machine readable and at least a portion is human recognizable;

a module with instructions configured to automatically associate at least some of the recognized indicia with one or more executable program instructions; and

a module with instructions configured to arrange the one or more executable program instructions to create at least a portion of a computer program for control of the device, ~~wherein the device corresponds to a mobile robot, wherein at least a portion of the associated behavior includes~~ the computer program is configured to control mobility of the mobile robot as a whole away from a current position.

42. (Canceled)

43. (Original) The computer program as defined in Claim 41, wherein the module with instructions configured to visually recognize indicia further comprises instructions configured to recognize visual features that correspond to scale-invariant features (SIFT).

44. (Currently amended) A circuit for controlling a device mobile robot, the circuit comprising:

a circuit configured to visually recognize indicia that are visible on at least one surface of one or more planar objects, where at least one surface of the planar objects includes indicia, where at least a portion of the indicia is machine readable and at least a portion is human recognizable;

a circuit configured to automatically associate at least some of the recognized indicia with one or more executable program instructions; and

a circuit configured to arrange the one or more executable program instructions to create at least a portion of a computer program for control of the device, ~~wherein the device corresponds to a mobile robot, wherein at least a portion of the one or more executable program instructions is related to~~ configured to control mobility of the mobile robot as a whole away from a current position.

45. (Canceled)

Appl. No. : 10/754,917  
Filed : January 9, 2004

46. (Original) The circuit as defined in Claim 44, wherein the circuit configured to visually recognize indicia is further configured to recognize visual features that correspond to scale-invariant features (SIFT).

47. (Currently amended) ~~[[A]]~~ An apparatus for controlling a ~~device~~ mobile robot, the apparatus comprising:

means for visually recognizing indicia that are visible on at least one surface of one or more planar objects, where at least one surface of the planar objects includes indicia, where at least a portion of the indicia is machine readable and at least a portion is human recognizable;

means for automatically associating at least some of the recognized indicia with one or more executable program instructions; and

means for arranging the one or more executable program instructions to create at least a portion of a computer program for control of the ~~device~~, ~~wherein the device corresponds to a mobile robot~~, wherein at least a portion of the one or more executable program instructions is ~~related to~~ configured to control mobility of the mobile robot as a whole away from a current position.

48. (Canceled)

49. (Previously presented) The apparatus as defined in Claim 47, wherein the means for visually recognizing indicia further comprises means for recognizing visual features that correspond to scale-invariant features (SIFT).

50. (Previously presented) The set of computer control cards as defined in Claim 35, wherein the operator associated with one of the operator cards is selected from the group consisting of: an arithmetic operator and a comparison operator.

51. (Previously presented) The set of computer control cards of Claim 35, wherein the flow control parameter associated with one of the flow control cards is selected from the group consisting of:

a conditional execution instruction;

a "break" instruction configured to terminate a programmatic loop being executed by the mobile robot; and



a "repeat" instruction configured to repeat a programmatic loop being executed by the mobile robot.

52. (Previously presented) The set of computer control cards of Claim 35, wherein the action associated with one of the action cards is selected from the group consisting of:

a "start" instruction configured to invoke execution of a program by the mobile robot;

an "end" instruction configured to terminate the execution of a program by the mobile robot; and

a "suspend" instruction configured to suspend the execution of a program by the mobile robot.

53. (Currently amended) The set of computer control cards of Claim 35, wherein the command associated with one of the command cards is selected from the group consisting of:

a "move" instruction configured to instruct the mobile robot to mobilize; and

a "speed" instruction configured to instruct the mobile robot as to the speed to move as a whole away from a current position.

54. (Previously presented) The set of computer control cards as defined in Claim 35, wherein a portion comprising computer-readable instructions comprises scale-invariant features (SIFT).

55. (Previously presented) The set of computer control cards as defined in Claim 35, wherein a portion comprising computer-readable instructions comprises a printed code.

56. (New) The method as defined in Claim 1, wherein the computer program is further configured by the card-like objects to control:

a speed of the mobile robot as it moves away from a current position; and  
a location to which the mobile robot moves.